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United States Department of the Interior

BUREAU OF RECLAMATION
WASHINGTON, D. C. 20240

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APR 3 1974

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DOI Waiver Letter in ERU FILE

Mr. O. Bilik
Director, All-Union Scientific Research
Institute of Integrated Automation
(VNIIEA) of Reclamation Systems
No. 11, Gorky Street
Moscow
U.S.S.R.

Dear Mr. Bilik:

We have received your letters dated August 23, 1973, and December 2, 1973, and are pleased to learn that the U.S.-U.S.S.R. Joint Commission on Scientific and Technical Cooperation in our field of "Methods and Means of Automation and Remote Control in Water Resource Systems" is proceeding favorably.

Since the formation of this work group, the first U.S. Project Coordinator, Mr. Gilbert G. Stann, has been appointed Commissioner of Reclamation and the demands of his position are such as to limit the amount of time available to devote to this project. Therefore, I have been designated as Project Coordinator. As Assistant Commissioner of Reclamation - Resource Management, I have the responsibility of ensuring the optimal management of water resource systems in Reclamation and this includes the use of automation and remote control.

I concur with your proposal to convene the first meeting of the American and Soviet specialists in this country in May or June for a period of 12 days. This meeting will establish preliminary agreement on and develop a program for our joint work in water systems automation. Also during this period, you will visit various projects in the Western United States which feature automation and remote control. In view of seasonal irrigation operations, I believe this visit would be most appropriate the last two full weeks in June. A return visit of the American delegation will be scheduled for August or September.

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Our work group, consisting of specialists from various Federal and state governmental organizations and irrigation districts, will be meeting soon and will prepare specific plans to present to you for your visit to this country. You can expect this information in about 1 month.

In regard to your question on an interpreter, the United States, as host country, will furnish an interpreter in this country. Likewise, we will expect the services of an interpreter from the U.S.S.R. when we visit your country.

We are sending to you, under separate cover, a collection of technical literature on water systems automation. Enclosed is a list of this literature.

Sincerely yours,

(SGD) E. F. SULLIVAN

E. F. Sullivan
Assistant Commissioner -
Resource Management

Enclosure

Separate Cover (see attached list)

bcc: Mr. Harald T. Peterson
Dr. William S. Butcher
[Dr. Oswald H. Ganley
each w/c enclosure

List of Enclosures

1. Water Systems Automation - State of the Art, U.S. Bureau of Reclamation, July 1973
2. Application of a Minicomputer to A Channel Control Problem, Enger, P. F; Strickland, E. A.; Gutierrez, M.; Hartman, V. B., U.S. Bureau of Reclamation, REC-ERC-73-11, July 1973
3. Study of Hydraulic Filter Level Offset (HyFLO) Equipment for Automatic Downstream Control of Canals, Schuster, J. C.; Serfozo, E. A., U.S. Bureau of Reclamation, REC-ERC-72-3, January 1972
4. Automatic Downstream Control of Canal Check Gates by the Hydraulic Filter Level Offset (HyFLO) Method, Harder, James A.; Shand, Michael J.; and Buyalski, Clark P., Fifth Technical Conference, U.S. Committee on Irrigation, Drainage, and Flood Control, I.C.I.D., October 8 and 9, 1970, Denver, Colorado
5. Remote Control Operation of Large Irrigation Structures, Schild, Neil W.; Williams, Harvey R., I.C.I.D., 1972, Bulgaria
6. Remote Electronic Control - A Prerequisite for Efficient Irrigation Operations, Shipley, H.; Juetten, R. L., Jr., I.C.I.D., 1972, Bulgaria
7. Current Water Systems Automation Research and Development in the Bureau of Reclamation, Calhoun, Charles A.; Irrigation and Drainage Specialty Conference, ASCE, Agricultural and Urban Considerations in Irrigation and Drainage, August 22-24, 1973
8. Irrigation Scheduling - An Essential Component of Optimum Water Management, Lord, J. M., Jr.; and Jensen, M. E., Lecture Notes, Water Systems Management Workshop, 1973
9. Basic Equipment in Automatic Delivery Systems, Buyalski, Clark P., National Irrigation Symposium, November 10-13, 1970,
10. National Irrigation Symposium Papers, American Society of Agricultural Engineers, November 10-13, 1970, Lincoln, Nebraska



UNITED STATES WATER RESOURCES COUNCIL

SUITE 800 • 2120 L STREET, N.W. WASHINGTON, D.C. 20037

APR 4 1974

*file: USSR
Water Resources
Planning,
Utilization, Mgmt.*

Dr. Jack Tech
Scientific Consular
American Embassy
Moscow
U.S.S.R.

Dear Dr. Tech:

Enclosed is a list of publications which are being forwarded under separate cover. These publications are from the U.S. Working Group on "Planning, Utilization and Management of Water Resources" under the U.S.-U.S.S.R. Joint Commission on Scientific and Technical Cooperation. This is reference material to be used by the U.S.S.R. and should be delivered to Mr. A. Volynov.

Sincerely yours,

s/Warren D. Fairchild
Warren D. Fairchild
U.S. Project Coordinator

Separate Cover

cc: Dr. Oswald Ganley

PUBLICATIONS SENT TO THE U.S.S.R. - Work Group on "Planning, Utilization and Management of Water Resources"

Irrigation Efficiency - A Bibliography, U.S. Department of the Interior, Office of Water Resources Research

Utility Analysis in the Valuation of Extra-Market Benefits with Particular Reference to Water-Based Recreation by J. A. Sinden, Water Resources Research Institute, Oregon State University

An Analytical Interdisciplinary Evaluation of the Utilization of the Water Resources of the Rio Grande in New Mexico: Upper Rio Grande Region, New Mexico Water Resources Research Institute, New Mexico State University

Predicting Rainfall-Erosion Losses from Cropland East of the Rocky Mountains, Guide for Selection of Practices for Soil and Water Conservation, Agriculture Handbook No. 282, Agricultural Research Service, U. S. Department of Agriculture in Cooperation with Purdue Agricultural Experiment Station

The Nation's Water Resources, U.S. Water Resources Council

Kansas Water Resources Research Institute, Interbasin Transfer or Migration: An Economic Analysis of Two Responses to Ground Water Depletion by R. W. Ruppert and G. S. Clausen, OWRR

Social Costs and Benefits of Water Resource Construction, by R. J. Burdge and K. S. Johnson, Research Report No. 64, University of Kentucky for Office of Water Resources Research

Selected Water Resources Abstracts, Vol. 7, No. 1 dated January 1, 1974, U.S. Department of the Interior, Office of Water Resources Research

Water Resources Research Catalog, Vol. 8, Parts I & II, U.S. Department of the Interior, Office of Water Resources Research

Federal Register, Vol. 38, No. 174, Part III, Water and Related Land Resources - Establishment of Principles and Standards for Planning, Water Resources Council

The Nation's Water Resources Summary Report, Water Resources Council

75 Water Assessment, July 1973, Executive Summary of the Draft Plan of Study, U.S. Water Resources Council

1972 Obers Projections, Economic Activity in the United States 1929-2020, U.S. Water Resources Council

A Uniform Technique for Determining Flood Flow Frequencies,
December 1967, U.S. Water Resources Council

Flood Hazard Evaluation Guidelines for Federal Executive Agencies,
U.S. Water Resources Council

Revision of Completed Regional or River Basin Plans, A Policy
Statement, U.S. Water Resources Council, September 8, 1971

Environmental Statements - Framework Studies and Assessments
and Regional or River Basin Plans, A Policy Statement, U. S.
Water Resources Council, February 10, 1971

Water and Related Land Resources Planning, A Policy Statement,
U.S. Water Resources Council, July 22, 1970

WRC Publication List, U.S. Water Resources Council

Development of a Prototype Search and Retrieval Network for
Water Resource Information, by J. L. Morrison, L. G. Greenwell
and N. B. Hilsen, University of Oklahoma Research Institute

WRC, U.S. Water Resources Council

Regulation of Flood Hazard Areas to Reduce Flood Losses, Vol. 1,
Parts I-IV, U.S. Water Resources Council

Regulation of Flood Hazard Areas to Reduce Flood Losses, Vol. 2,
Parts V-VI, U.S. Water Resources Council

New Directions in U.S. Water Policy, Summary, Conclusions and
Recommendations from the Final Report of the National Water
Commission

Sedimentation, Section 3; SCS National Engineering Handbook,
U.S. Department of Agriculture, SCS -- Chapters 1, 2, 7

Drainage of Agricultural Land, Section 16, SCS National Engineering
Handbook, U.S. Department of Agriculture, SCS

Sedimentation, Section 3, SCS National Engineering Handbook,
U.S. Department of Agriculture, SCS -- Chapters 4, 5, 6, 10

Hydrology, Section 4, SCS National Engineering Handbook, U.S.
Department of Agriculture, SCS

Listing of Engineering Manuals, U.S. Corps of Engineers

Engineering and Design Stability of Earth and Rock-Fill Dams,
Engineer Manual, Department of the Army, Corps of Engineers - E, 1110-2-1902

Earth and Rock-Fill Dams General Design and Construction
Considerations, Engineering and Design, Engineer Manual,
Department of the Army, Corps of Engineers -- EM 1110-2-2300

Structural Design of Spillways and Outlet Works, Engineering and
Design, Engineer Manual, EM 1110-2-2400, Department of the Army,
Corps of Engineers

Systematic Drilling and Blasting for Surface Excavations,
Engineering and Design, Engineer Manual, EM 1110-2-3800, U.S.
Department of the Army, Corps of Engineers

Runoff Evaluation and Streamflow Simulation by Computer, A
U.S. Contribution to the International Hydrological Decade,
U.S. Army Engineer Division, North Pacific , Corps of Engineers,
U.S. Army, Portland, Oregon, 1971

Program Description and User Manual for SSARR Model Streamflow
synthesis and Reservoir Regulation, Program 724-K5-G0010, U.S.
Army Engineer Division, North Pacific, Portland Oregon, Sept. 1972

Flood Hydrograph Package, HEC-1, Generalized Computer Program,
Users Manual, U.S. Army, Corps of Engineers, January 1973

Hydrologic Engineering Methods for Water Resources Development,
Volume 4, Hydrograph Analysis, The Hydrologic Engineering Center,
Corps of Engineers, U.S. Army, Davis, California, October 1973

STATINTL

GENERAL EVALUATION *

These ten books represent the irrigation and reclamation work of the Central Asian Republics, Kirghisia in particular. This area of steep mountain slopes, desert valleys, and river oases has been irrigated since prehistoric times, but only partially and poorly. The problem of these republics has been to modernize, reconstruct, and enlarge existing irrigation systems and to create new ones to meet the needs of new lands being developed into large state farms. The process of accomplishing this under a socialist economic system is well reflected in this list of books as a whole and in Mamarasulov's "Water Problem of the Zarafshan Basin" (No. 10) in particular. The only book to be somewhat representative of the Soviet Union as a whole is the "Trudy of the All-Union Conference on the Automation of Irrigation Systems" (No. 7). In this case, an effort should be made to obtain the papers from a later conference, if such was held in the Soviet Union (See evaluation).

The books are being returned to you to help in your decision as to whether any or all will be translated. The recommendation was made to have abstracts of individual papers translated where available as a check on the usefulness of the contents before opting to translate the papers themselves. To expedite such translations we have zerox copies of these pages, and you can indicate any abstracts you wish translated by book and paper numbers.

Most of the books are sborniki (collections of papers) from various institutes. Papers of particular interest to the American team could be selected and translated in a relatively short time with considerable savings over the cost of translating entire books.

After the members of the Soviet team are selected, it might be advantageous and diplomatic to see if any of the monographs or papers were written by the team members. In this case, a quick translation or summary of any such papers could be prepared for use by the American team.

The Denver Library of the Bureau of Reclamation has a copy of a translation, TT 71-53085 entitled "Remote Control of Irrigation

*Short unofficial evaluation of books received from the Soviet Union and evaluated by Mrs. Anne Sands, recently retired from the Bureau of Reclamation

Water Resources

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OBG/BBJ

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SB

Systems" edited by V. I. Kurotchenko and N. I. Babanin and published by the Academy of Sciences of the Kirghis SSR, Institute of Automation and Remote Control. The translation is somewhat difficult to read, lacks a list of titles and authors of the individual papers, but is complete with figures. The Library Call No. is TC 809 .T268. The TT 71 number indicates the date of translation is 1971. Our Russian test was sent with the translation request and has not been returned.

Ministry of Reclamation and Water
Management of the USSR

KIRGHIS SCIENTIFIC-RESEARCH INSTITUTE
OF WATER MANAGEMENT

Sbornik No. 28

Frunze 1972

PROBLEMS OF WATER MANAGEMENT--
ECONOMICS AND ECONOMIC--
MATHEMATICAL MODELING
(Voprosy vodnogo khoziaistva--
Ekonomika i ekonomiko-
matematicheskoe modelirovanie)

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6. Kovalenko, B. G.; Martynov, A. N.; Oleinik, A. V. Evaluating the efficiency of plans for leveling irrigated lands	71
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10. Kovalenko, B. G. Methodology for
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1/Translator's note: Individual abstracts
will be translated on request. References
are given at the end of each paper.

ABSTRACT

This collection of papers gives the results of the work of the Department of Engineering and Economic Research in reclamation and water management of the Kirghis NIIVKh. It discusses problems in modeling irrigation systems and raising their economic effectiveness. It contains 10 papers which examine economic-mathematical models of the computations for planning irrigation systems, water distribution and operating control systems in actual use, methods of evaluating the effectiveness of and computations for leveling irrigated lands, the economic basis for water management projects, standards, methods and techniques of irrigation. Solving of these work-consuming problems is oriented to the use of the EVM "Minsk 22 M."

PROBLEMS OF WATER MANAGEMENT--ECONOMICS
AND ECONOMIC-MATHEMATICAL MODELING

EVALUATION

This collection of papers is of marginal interest because:

1. It is rather old and deals with irrigation experience in only one republic (Kirghis SSR).
2. The Soviet economic system and cost accounting for construction projects both differ greatly from ours. The differences would have to be studied before a translation of the entire book would be worth the cost.
3. The "Minsk 22M" computer for which software is presented in the book could differ significantly from any of our computers.
4. Individual papers might be worth the cost of translating, but before proceeding, have the individual abstracts on pp 131-134 translated for evaluation of contents.

Kovalenko, B G; Merenkov, V Z; Ivanenko, V N; et al
Optimizatsiia planov razvitiia orosheniia (s raschetami
na EVM "Minsk-22M") (Optimizing plans for irrigation de-
velopment (with computations for the EVM "Minsk-22M")).
Monog, KirgisNIIVKh MMVKh, Izdat "Kyrgystan," Frunze,
123 p, 1972

This book presents with profuse illustrative examples
the methodology (economic-mathematical models,
algorithms, and programs for preparing the initial
data and computations for the EVM "Minsk-22 (32)"^{1/})
for optimum planning of the development of water and
agricultural management applicable to the irrigated
farming zones of Central Asia. It examines the
problems of the economic basis for optimum speciali-
zation of farming features, their ranking in the order
of feasibility, and priority of construction. The
book is intended for workers in planning and design
organizations of the Ministries of Agriculture and
Water Management of those republics with irrigated
farming. It will also be useful to the scientific
workers and students of similar interests.

1/Translator's note: Electronic computer.

Ministry of Reclamation and Water Management SSR
KIRGHIS SCIENTIFIC-RESEARCH INSTITUTE OF WATER MANAGEMENT
Monograph Frunze, 1972

OPTIMIZING PLANS FOR IRRIGATION DEVELOPMENT
(with Computations for the EVM "MINSK-22M"^{1/})

(Optimizatsiia planov razvitiia orosheniia
(s raschetami na EVM "Minsk-22M"))

by B. G. Kovalenko, V. Z. Merenkov, V. N. Ivanenko,
and E. N. Gerasimenko

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1/Translator's note: Electronic computer.

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ABSTRACT

This book presents with profuse illustrative examples the methodology (economic-mathematical models, algorithms, and programs for preparing the initial data and computations for the EVM "Minsk-22 (32)") for optimum planning of the development of water and agricultural management applicable to the irrigated farming zones of Central Asia. It examines the problems of the economic basis for optimum specialization of farming features, their ranking in the order of feasibility, and priority of construction. The book is intended for workers in planning and design organizations of the Ministries of Agriculture and Water Management of those republics with irrigated farming. It will also be useful to the scientific workers and students of similar interests.

OPTIMIZING PLANS FOR IRRIGATION DEVELOPMENT

EVALUATION

This book discusses the advantages of irrigation farming such as the increase in crops from irrigated land, the greater predictability of the amount of harvests, the costs and increased income, and how the computer helps planning of these statistics, which in turn justify irrigation projects. This economic planning is keyed to the Soviet system of government planning with established quotas for each crop and each farm. For this reason the book would be of marginal interest except as a means of understanding the differences in economic systems and how the effect of this difference is felt on the state farms and in their operating practices. Again, the limited area of the Soviet Union involved, the specific intention of the programs for the Minsk-22 computer, and the 1972 date of publication are additional factors against translating the book. Taking parts from the monograph to translate would not be feasible unless some particular part of the computer program such as predicting agricultural productivity would be of interest.

Mamarasulov, S M

Vodnaia problema basseina Zarafshan i puti ee resheniia (Water problem of the Zarafshan Basin and how to solve it). Monog, Izdat "Uzbekistan," Tashkent, 214 p, 1972

The most important condition for assuring high agricultural production with stable predictable harvests of agricultural crops is land reclamation. Its significance was well understood by the 24th Congress of the KPSS^{1/} and the June 1970 Plenary Session of the KPSS. One of Uzbekistan's river basins in which the water problem was most serious and has been most completely solved is Zarafshan. Accordingly, the author set for himself the task of investigating the various conditions causing Zarafshan's water problem at all stages of implementing solution plans. The investigation was based on a detailed study of methods of working out plans of water distribution in the Zarafshan Valley, on experience in operating the irrigation systems there, and on the plans for reconstructing them, and building new irrigation structures. The book is intended for agronomists, reclamation workers, hydraulic engineers as well as directors of collective and state farms.

^{1/}Translator's note: Communist Party of the Soviet Union.

WATER PROBLEM OF THE ZARAFSHAN BASIN
AND HOW TO SOLVE IT
(Vodnaia problema basseina Zarafshana
i puti ee resheniia)

by S. M. Mamarasulov

Izdat "Uzbekistan"

Tashkent, 1972

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^{1/}Translator's note: Amu Darya is the largest river of Central Asia, flowing between the Turkmen and Uzbek SSR, and then to the Aral Sea.

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^{2/}Translator's note: "Machine canal" means a canal with pumping plants, in this case two. Oblast is a political administration subdivision smaller than a republic, territory, or province.

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ABSTRACT

The most important condition for assuring high agricultural production with stable predictable harvests of agricultural crops is land reclamation. Its significance was well understood by the 24th Congress of the KPSS and the June 1970 Plenary Session of the KPSS. One of Uzbekistan's river basins in which the water problem was most serious and has been most completely solved is Zarafshan. Accordingly, the author set for himself the task of investigating the various conditions causing Zarafshan's water problem at all stages of implementing solution plans. The investigation was based on a detailed study of methods of working out plans of water distribution in the Zarafshan Valley, on experience in operating the irrigation systems there, and on the plans for reconstructing them, and building new irrigation structures. The book is intended for agronomists, reclamation workers, hydraulic engineers as well as directors of collective and state farms.

EVALUATION

This book has some value for translation because of its detailed description of the history of irrigation in a Central Asian river valley, the problems encountered at each stage of modernization and enlargement of the irrigation systems, use of interbasin diversion, new structures built, and the plans for future development. It would increase the American team's understanding of the geographical, economic, and technical background of Soviet team members from the Central Asian republics. On the other hand, the text is very specific to one river basin and the methods used to solve its so-called "water problem." I feel little would be gained unless the entire book is translated and printed. Information on individual structures or even the diversion projects should be more technically adequate if obtained from the technical literature of the planning, construction, and operation periods.